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10 Keys to Increasing Print Apply System Uptime

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In the grand scheme of industrial automation products, automated print and apply labeling systems are not as “exciting” as many other products. Perhaps this is why many system purchases go through the selection and installation process with a blind eye towards what it takes to keep the system operating optimally. The mechanical operation of the components is one aspect of print apply system uptime. Another critical component of uptime is the quality of the human and machine readable information the company and its supply chain partners utilize to increase efficiency and product visibility while reducing costs. When the information isn’t readable, the application of that information is simply extra cost, which in turn leads to increased costs and reduced efficiency throughout the supply chain. There are a number of steps a company can take to maximize print apply system uptime and ensure high quality, readable label information.

- 1. Clean the Print head:** Routine and proper print head cleaning has the single greatest impact on print quality and print head life. The thermal print head should be cleaned, at a minimum, as each new roll of ribbon is installed. Taking one extra minute to clean the print head during this normal downtime will save countless hours of frustration, unnecessary expense, compliance penalties and unwanted future downtime. Failure to clean routinely results in debris build-up on the print head, leading to heat induced element failure, poor print quality, unreadable barcodes and, ultimately premature print head failure.
- 2. Change the Platen Roller:** Even a new or spotlessly cleaned print head will not print well when mated to a damaged or worn platen roller. The platen roller is the surface against which the print head prints. An analogy would be “print head, label, platen roller” = “pen, paper, table”. If the “table” is scratched and marred, it will be difficult to write clearly even with a new “pen”. Downtime results when maintenance personnel spend time making adjustments or replacing good parts in an effort to compensate for the damaged/worn platen roller. Then, additional downtime is necessary to finally replace the platen roller and bring all the other adjustments back into normal range. Ideally, replace the platen roller whenever the print head is changed. Some newer printer designs make this process very easy to accomplish in less than one minute.
- 3. Use Quality Media:** Label and ribbon selection is too often handled like the buying of pens and notepads. Instead, the selection of labels, ribbons and a label supplier should be thorough and include performance testing. Symptoms of poor media can include: excessive adhesive buildup along the label path, labels failing to peel from the liner, excessive label/liner dust buildup in the printer, labels separating from the liner before reaching the peel edge, poor print quality and label web breakage during operation. Each of these problems results in production downtime while corrections are made. Conversely, the use of quality media will help maximize print head life and reduce system downtime.



- 4. Evaluate Media Change Procedures:** All print and apply systems require normal downtime to change used label and ribbon rolls. During the system selection process, be sure to evaluate the ease with which labels and ribbon can be changed. The label and ribbon path should be simple and intuitive for the operator. Most label paths seem to follow this rule. Ribbon routing on the other hand is quite different among the various print engine manufacturers. If the ribbon routing is overly complex, the result is longer downtime while operators change the media as well as increased potential for unnecessary downtime due to incorrectly installed ribbon.
- 5. Minimize Heat, Pressure & Print Speed Settings:** Always print at the lowest speed that allows the application throughput rates to be met, while at the same time setting the heat and pressure to the lowest levels that provide quality print at the set speed. A heat setting too high can result in ribbon material burning to the print head elements, resulting in extra cleaning and premature print head failure. Excessive pressure against the print head will cause increased wear resulting in more downtime to replace worn out print heads and platen rollers. Proper heat, pressure and print speed settings will result in longer component part life, lower cost of operation and increased uptime.
- 6. Provide Operator and Maintenance Training:** Most system installations include some level of operator training. What gets overlooked most often is training for second and/or third shift operators. All operators on all shifts need to be trained in the basic operation of the system, proper media changing techniques, proper cleaning protocols and basic adjustment procedures. Maintenance personnel training should include the above items as well as detailed troubleshooting, adjustment and major component service information. Well-trained personnel are critical to maximizing the performance of the system. There can never be too much hands-on training.
- 7. Stock Critical Spare Parts:** Even the most basic print and apply installations require a minimum level of spare parts on site. The thermal print head and platen roller are two print engine wear items that will get replaced most frequently. These parts should always be available on site. The mix of additional spare parts is determined by the number of systems installed, the environment, the system duty cycle, the service training level of onsite maintenance personnel as well as other factors. The print apply system manufacturer or local reseller can recommend the full complement of spare parts suitable for a company's specific installation.
- 8. Consider a Spare Print Engine:** Many companies choose to have a spare print engine on hand at all times. The OEM print engine is designed for quick and simple replacement. In the event of a printer problem, the print engine can be quickly swapped out. This allows the production line to get up and running quickly while the original printer is serviced. While the print engine is "off-line" for service, use the opportunity to check all wear items and make proactive replacements in order to maximize future uptime. This is simply the "ounce of prevention" rule.



- 9. Ensure Proper Material Handling:** Print and apply systems often get blamed for downtime that has nothing to do with the printer applicator, but instead is the result of poor material handling. Material handling can make or break any application. Therefore, material handling considerations need to be clearly understood and properly employed to ensure effective system operation. Additionally, the material handling components need to be properly maintained and routinely inspected for proper operation. Something as simple as a broken or misaligned guide bar can result in severe print and apply operational issues.
- 10. Evaluate Printer Serviceability:** One way to minimize downtime is to ensure that routine printer service procedures can be accomplished quickly. Look for print heads and platen rollers that can be cleaned and/or changed out quickly. Some of today's print engines now offer tool-less print head replacement and quick-change platen roller replacement. Minimizing the time needed for these routine replacements results in more uptime for the system.

While the above steps are not an exhaustive list, they certainly lay the foundation for maximizing the uptime of any printer applicator system. Because item #1, clean the print head, is so important, it bears touching upon again. The single most beneficial step any company can implement is a routine and thorough print head cleaning procedure. Not only will system performance improve, but the potential for retailer charge-backs due to unreadable barcodes will be reduced due to better and longer lasting print quality.

The principal performance goal of any print and apply solution is to provide companies with optimal performance and maximum uptime in production. Print and apply systems all have normal downtime associated with media (labels/ribbon) changes, preventive maintenance procedures and wear parts replacement. The goal is to minimize this normal downtime while utilizing the time to ensure the printer applicator system will run optimally during production use. In other words, intelligent use of normal downtime will maximize uptime.

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